



First Mindset
Users Group
Newsletter #3

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F.M.U.G.
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FMUG NEWS

Welcome to our new logo! The above artwork was created by your editor with a two-line BASIC program using the 640 by 400 pixel resolution Screen 7, plus a little typing, and was printed on a Gemini 10X printer using the wonderful MGI (Mindset Graphics Interface) program that comes with 4-Point Graphics Plus. This is by no means the final version, and will change as soon as we or you come up with a better one. See "Printing Graphics" in this newsletter for technical details on the printing process.

The fourth meeting of the First Mindset Users Group will occur at 7:00 P.M. on Monday, January 21 at Graphic Reproduction, 981 Mission St. in San Francisco. Jeff Patterson hopes to have a Video Production System to demonstrate at that time, and we'll have a discussion of peripherals.

Interest in the Mindset computer continues to run constant but at a low level. We get, on an average, about three to five inquiries a week about the computer and/or the Users Group, usually referred by Mindset Corporation. There should be a notice about the group in the February issue of Byte magazine.

NEWS

Mindset Corporation suffered another series of layoffs January 4, and the entire staff currently numbers about 30. We had been planning to hold the January FMUG meeting at Mindset headquarters in Sunnyvale, so when we heard about the layoffs, we immediately called down to see if this was still feasible, and to find out what this new development means for Mindset users. Jim Crowther of Mindset, who has taken over the departed Skip Satterlee's position of Customer Support, was helpful and informative, though he didn't have much good news to report. At any rate, we'll probably take Jim up on his tentative offer to hold the meeting

at Mindset in February rather than January. The date of that meeting will most likely be February 18 (Washington's Birthday).

Did you know that most existing Mindset systems are incapable of accomodating the new Video Production System? To use the VPS, you must have bought a special genlock-capable system unit which costs about \$500 extra, or else the entire VPS system for \$4000. Anyway, Mindset had originally planned to offer upgrades to owners of existing units for a fee. Due to the new layoffs, however, this plan has been placed on hold. Also on hold is the long-awaited upgrade to GW BASIC, which is buggy and doesn't perform animation very well. Oh well, we've been meaning to learn C anyway. Another eagerly anticipated item whose development has been placed on hold is the Mindset hard disk drive, which would have been a 10-megabyte drive costing \$1200-\$1500. Apparently Mindset has pretty much given up on the microcomputer market, and is focusing a last-ditch marketing effort on the commercial video industry. We understand the system is being used by a number of video outfits, and we'll try to get more details about this soon. We'd appreciate a report from any readers having information on this.

WHERE DO WE GO FROM HERE?

Of course, FMUG will continue to support the Mindset computer and its users, even if the unmentionable worst should happen. We're currently discussing plans to offer new commercial Mindset programs to members for reasonable prices, and we're constantly collecting information on compatibility, graphics, special uses and so on. Jeff Patterson of Graphic Reproduction (415-777-9346) has stated his commitment to continue to support Mindset owners no matter what.

However, due to certain other recent developments, we feel a certain broadening of our scope is in order -- specifically, we feel it's appropriate cover computer graphics in general, and not just specifically for the Mindset. For example, many in the microcomputer world are eagerly awaiting an advanced color graphics machine developed by Amiga and being produced by Commodore, called the Lorraine. We fully intend to cover this machine and others when they're available. Here's a report on one such development:

THE NEW ATARI COMPUTERS

The Winter Consumer Electronics Show (CES) in Las Vegas has just closed, and by all accounts one of the most interesting exhibits was Atari Corporation's. Atari was bought from Warner Brothers in July 1984 by Jack Tramiel, founder of Commodore, Atari's chief rival in the home computer field. According to Michael Tomczyk, author of The Home Computer Wars (Compute! Books), Tramiel revolutionized the home computer industry by introducing the first home computer with color graphics in the USA for under \$300

-- the VIC-20. Tomczyk's book, by the way, is a fascinating insider's account, and is must reading for anyone interested in Commodore's past or Atari's future, or both. Jack Tramiel was reportedly ousted (or resigned) from Commodore early in 1984 because he wanted to bring his three sons into high-level executive positions within the company, and Irving Gould, the chief stockholder, objected.

Tramiel's Atari Corp.'s announcement of six new computers at CES has the computer world abuzz. There are two series. The XE line is a continuation of the classic 400/800/1200XL/600XL/800XL series and is fully software-compatible with the existing Atari machines. There will be four XE computers. The basic model, the 65XE, is functionally identical to the 800XL. The 65XEM features an "incredible sound synthesis system." The 65XEP (P for Portable) has a built-in monochrome monitor and disk drive for business use on-the-go. The 130XE doubles available memory to allow use of large business applications.

But the real attention grabbers are the two ST computers. ST stands for Sixteen/Thirty-two, because the CPU (Central Processing Unit -- the central microprocessor) is a Motorola 68000 (same as Macintosh), which has 32-bit internal registers and a 16-bit data bus. The ST's have a 32K bit-mapped screen and three graphics modes -- low resolution is 320 by 200 pixels with 16 colors (from a palette of 512), medium resolution is 640 by 200 in four colors, and high resolution is 640 by 400 monochrome. Sound familiar? These are identical to three of Mindset's graphics modes. Also notable is the fact that these computers are equipped with Digital Research's GEM operating system, which works very much like Apple Macintosh's icon-oriented approach. In fact, a typical GEM applications screen resembles a Macintosh screen closely. Some of GEM's features are a two-button mouse controller, icons, drop-down menus, windows, bit block transfer (BLT), vector drawing, and a real-time clock.

Other features of the ST computers include a sophisticated sound generation system including MIDI interface for controlling external synthesizers, a keyboard with one-touch cursor control keys (laid out identically to Mindset's, but near the top of the keyboard), an 18-key numeric keypad, and built-in serial (RS232C) and parallel (Centronics) ports. The two single-unit computers are the 130ST with 128K, and the 520ST with 512K. Associated peripherals Atari will market include three printers: a color non-impact dot matrix, a daisy-wheel letter quality, and an impact dot matrix printer. There will also be single and double-sided 3-1/2-inch floppy drives (250K and 500K respectively), a T-sided 1/2-inch 10 megabyte hard disk, and two 12-inch monitors: high resolution monochrome, and RGB color.

We don't have prices yet for any of these, but we know that prices will be low. The ST machines have been dubbed "Jackintosh" by those who believe that Tramiel would love to take a big bite out of Apple's market by offering technology similar (or superior) to its Macintosh at approximately a third to a

fourth of the cost. The big question is: Will there be any application software available for the machine in time to promote the ST's success? Tramiel is reportedly actively encouraging software development by third-party houses. Also, since Digital Research has made GEM available to IBM PC software developers, it would probably be easy to port applications developed for the system between computers. That is, any programs written for GEM on the PC will run with little or no alteration on the Atari ST's. And it's a sure bet that there will be significant program development on GEM for the PC, because MS-DOS's (and PC-DOS's) lack of user-friendliness is the chief current stumbling block in sales of PC hardware and software.

PRINTING GRAPHICS

In the last issue of this newsletter, we reviewed IMEI's 4-Point Graphics Plus including the Mindset Graphic Interface (MGI), and mentioned that MGI doesn't work with our Gemini 10X printer. If you set MGI for Epson MX, RX with SETPRINT, MGI prints out recognizable graphics on the Gemini, but separates each line of graphics with a line of blank space for an unpleasant striped effect. This is due to the fact that Epson's smallest increment of paper advance is 1/172 of an inch, while Gemini's is larger -- 1/144 of an inch. Thus, when the paper is advanced the proper number of increments to print the next line of graphics on an Epson, advancing the same number of (larger) increments on the Gemini moves the paper too far forward.

The solution is to decrease the number of increments advanced for each line. If you have a disk editor such as Peter Norton's Sector Modify Utility, this is simple to effect. NOTE: DO NOT TRY THIS ON THE ORIGINAL MGI.EXE FILE -- USE A BACKUP. First use SETPRINT to set MGI for Epson MX, RX. Next, go to the 14th sector of file MGI.EXE. You need to change two bytes in this sector. The sector offset of the first byte, which is 17h (hexadecimal), is 437d (decimal) or 1B5h. Change this byte to 0Fh. The sector offset of the other byte, which is 24h, is 45Eh or 1C7h. Change the 24h to 18h. In doing this, you're reducing the number of increments advanced for each line of graphics by a third. If, for some reason, you don't find the bytes 17h and 24h at the described locations, look for the text "FRIEZEPRT Epson RX,MX". The first byte comes shortly after this, immediately preceded by the two bytes 1B 33, which mean "ESC 3" to the printer. The second byte should be about 1B (decimal) bytes after the first, and is also preceded by the two bytes 1B 33.

Unfortunately, as we learned from experience, SETCOLOR (for rearranging the correspondence of colors on the screen to patterns on the printer) doesn't work with the modified MGI.EXE file -- you get a mysterious "Template CRC Error" message. This is the reason for retaining the original file. We should note here that, the MGI documentation notwithstanding, black on the screen maps to black on the printer and similarly white maps to white. If you want to avoid using up your ribbon on a few pictures,

reverse these by using SETCOLOR menu Option B to map color 0 to 0 and 15 to 15, and use SETCOLOR menu Option D to save the new default map to the MGI.EXE file, then copy the file and modify it. If you want to use reassign the colors later, use SETCOLOR on another copy of the original MGI.EXE file, then change the two bytes again. By the way, SETCOLOR.EXE and MGI.EXE must be on the same disk.

If you don't have a disk editor or are nervous about trying this, we'll be happy to send you a copy of the modified MGI.EXE file if you send a blank disk and postage paid return mailer to the address at the beginning of the newsletter.

MINDSET TELECOMMUNICATIONS

The following was written by Jeff Gortatowsky, a Mindset enthusiast from Rochester, New York, and was downloaded from CompuServe by your editor. Jeff has been alerted about the group and hopefully will contribute further to the newsletter.

The purpose of Mindset Notes is to chronicle on a semi-regular basis my adventures and discoveries with the recently released Mindset FC. First a little background.

The Mindset FC is a sixteen bit computer based on the Intel 80186 CPU. In addition to the main CPU the Mindset design incorporates 2 additional 'co-processors' that control the video output. When bought with the disk expansion unit the Mindset operates under MS-DOS. It therefore has a limited ability to run applications for the IBM PC. When fully configured the Mindset has 2 disk drives (360k each), 256k of main memory, 32k of graphics memory, and a detached keyboard. At this time this configuration costs (approx.) \$2500 retail. In addition some hidden costs are almost essential. MS-DOS, BASIC, a printer port, and a serial port are all extra. Total cost after adding these items will run about \$3000. A more in-depth description of the Mindset may be found in the April 84 issue of BYTE magazine.

The computer runs fairly hot, especially after several hours of use. This seems to bother me more than it does the computer. I've used it for hours on end, without the slightest hint of trouble, in 90 degree weather. The unit does have a fan installed. While on the subject of the fan, I should tell you that mine has gotten somewhat louder since I bought the computer. Still it seems quieter than the fan in my Columbia MFC.

Physically the computer is quite small compared to the IBM PC. It's about the width and depth of an ATARI 800 and about 1 1/2 times as high. The only problem its size will pose is if like me, you have a fairly large monitor and wanted to place it on top of the unit. Also Mindset warns against putting more than 25 pounds on top of the unit, so I took my 25 inch color TV

off it and bought a Proformance monitor from SEARS Business Center.

Moving along to MS-DOS I've found that the MODE command doesn't always allow you to set the screen mode you ask for. The manual explains that the MODE command can be used to place the machine in either the Mindset Native mode or the emulation mode and leaves it at that. What the difference is between the two is not explained. In addition the Native Mode only seems to work if you define the screen as GRAPHICS not CHARACTERS. Doing so causes the cursor to disappear until you change back to the EMulation mode. The manual is useless on the subject. However it seems that BASIC ignores the DOS screen mode anyway and goes ahead and sets the mode you choose.

In the compatibility department I discovered why most of my excellent IBM terminal programs don't work. All of them seem to manipulate the RS232 control and data ports directly. In the IBM the first port installed maps to I/O address 3f8h. Looking at the DOS data area in the Mindset I've found the port mapped at 8080h. that isn't the only problem however. It appears (though I haven't completely confirmed this) that the data and control registers are not in successive I/O locations like the IBM. Instead they seem to be spaced 2 locations apart from each other. That limits the type of program patching I can do. If a program uses the INC DX instruction, which only takes one byte, then its impossible to put a ADD DX,2 instructions in its place for the Mindset. The ADD instruction takes two bytes. The increment instruction works on the IBM because of the control ports for the RS232 being in sequential order. For those I've lost I apologize. However for those familiar with the IA8X CPU's, I'm open to suggestions. I've got an idea of replacing the RS232 code completely with a setup then call to the DOS interrupt for RS232 I/O. But it would take alot of work. Then again I could just keep on using FCTALK III in BASIC (uhg) or write my own (when???) .

While I was working in the RS232 problem I also found the printer port mapped at 80COH. So far however I've found none of my programs except VisiCalc to have a problem with this. Perhaps the printer port is mapped twice. I doubt this but it might be possible. A more likly explanation is that a program not finding the printer where it should be decides to use MS-DOS's printer vector instead. Again as with the RS232 port the printers I/O addresses are spaced 2 apart. I could find nothing in the INTEL 186 programmers reference no mandatory so I don't think it's needed because of the 80186.

Another point I've discovered. The Mindset has a very powerful sound capability. This includes 6 voices, variable attack and decay, and interrupt driven (background) sound. However the Mindset does not send sound information over the video signal. Not even the RF modulated TV output. You must have a separate AUDIO IN jack on whatever type of video

display you're using. Alternatively you can connect the sound output to a stereo AUX input. Of course if you like me and like to listen while typing that won't do. So beware when buying monitors for the Mindset. Try and get one with separate audio inputs.

Mindset Notes ---- June 20, 1984

Rumor here in Rochester has it that Computerland will be carrying the Mindset in the future. This could help it get the recognition it deserves. The last issue of PC magazine has a full 2 page ad from Mindset, so it looks as if they're ready to push the machine. Also in the magazine department, the July issue of Microsystems has a comparison of the DEC PRO 350, NCR PC, and the Mindset. Although they were only able to test the Mindset briefly I feel for the money it came out very well indeed. There are a few errors in the article. One being the Mindset supports 4 colors in 640x200 and 2 in 640x400 interlaced.

Using Trace 86 and DEBUG I've confirmed the serial port is located at 8080 hex. After typing in and trying a short serial driver for the IBM I found the port also seems to answer when addressed as 3f8 (IBM's port address). It must be designed to answer to both (?). However I could not read from it at 3f8. I found the RS232 service routine (INT 14H) at F800:11A0 hex in the ROM BIOS. Looking through it I found that Mindset's baud rate divisors are slightly different to the IBM's. Keep this in mind when doing any writing or patching for the Mindset. The table starts at F800:128A and ends at offset 1299H. It seems to cover baud rates from 134.5 to 9600. As I suspected each register of the Mindset's serial port is separated from the next by 2 I/O addresses. The entry parameters to the BIOS seem to be totally IBM compatible. That doesn't help most terminal programs as they don't use it. I'm working on patches for a couple.

Remember that when disassembling the BIOS, the 80186 has 8 new instructions that most IBM debuggers won't disassemble. Debug found one of these in the RS232 BIOS routine. It appears as a 'DB C1' to DEBUG. However when executed performs a rotate of the DI register left by an immediate value of 4. The 8086/88 don't have that addressing mode. The worst part of course is it makes a mess of the disassembly listing as the following instructions aren't in the correct addresses. A word to the wise. Don't assume you're looking at data. Make sure it's not a 80186 specific instruction. I keep the INTEL manual nearby at all times. The best way to get the disassembly straight is to step through the unknown instruction, see what happens, then pick up the disassembly after that point. Of course this could cause a lock up if it's not a instruction so look up the hex op-code if at all possible.

More assembly ramblings...the End of Interrupt sequence in the Mindset seems to be different. In the BIOS it doesn't look like it's IBM compatible. But so much software runs ok that I wonder if Mindset didn't somehow emulate this also.

Here's a quick map of the serial port as I've found it. I hope this helps some Mindset owners.

COM1: ONLY!

8080H -- TX/RX data register when bit 7 (DLAB) of the Line Control

Register (LCR) is false (0)

8080H -- LSB

8082H -- MSB of baud rate divisor when LCR's DLAB bit is true

8086H -- Line Control Register

808AH -- Line Status Register

808CH -- Modem Status Register

Except for the 2 address spacing, they all seem to operate as described in the IBM Technical Reference Manual (TRM). Also the ROM BIOS entry parameters are IBM compatible. These can also be found in the TRM. The major difference is the I/O locations and the baud rate divisor's. I guess you're wondering why I'm going through such great pains to discover the RS232 secrets, you probably never had to work with a BASIC terminal program. Also I believe you should know your machine's basics before moving on to the more complex features.

That's all for now. If you've found my ramblings interesting or of value let me know. If there's enough interest I'll continue. I'm having a ball exploring! Let's hear from you!

From the Bit Bucket.
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